CREATING SUSTAINABLE BUILDINGS

VOLUME I.

PROGRAM CASE STUDIES

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CREATING SUSTAINABLE BUILDINGS
VOLUME I. PROGRAM CASE STUDIES

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Citywide Sustainable Building Task Force
Los Angeles, CA

Also see: Volume II. Creating Sustainable Buildings: A Resource Guide

INTRODUCTION

These two case studies of municipal sustainable building programs are intended to provide practical information to staff in various agencies within the Commonwealth of Massachusetts, as they begin to consider developing a comprehensive sustainable building program or project for state-owned buildings. Therefore, the content of the cases focuses heavily on the internal governmental process of getting the programs off the ground.

The Austin and Los Angeles initiatives were selected as case studies because of their comprehensiveness, and the ability to access information about them. These cases were also chosen for their differences. While Austin's program has been in place for some time and can offer some retrospective lessons, Los Angeles' program is now in the critical stage between planning and implementation, and can therefore offer many insights into the *process* of developing a program.

The cities of Austin and Los Angeles are by no means the only governments with sustainable building programs. However, very few state-level programs exist; North Carolina's is the most advanced that we know of, but it is focused on private, not public, sector buildings. In the accompanying Resource Guide, we list and describe fourteen municipal, regional, and state programs, and many more could undoubtedly be found with further research. Also, many local and state governments (including Massachusetts) that do not have *general* sustainable building programs *do* have specific programs that contribute to sustainable building (i.e. programs that promote energy efficiency in buildings, or environmental building materials procurement).

While these two cities do not happen to be in the eastern part of the U.S., several sustainable building programs and many projects and resources do exist in the east. For example, in the Resource Guide, there are descriptions of programs in New York City, Boston, and in the state of North Carolina. The EPA has been doing a sustainable renovation of their headquarters in Washington, D.C., as well as their Research Center in Triangle Park, North Carolina. Some other projects that are worth noting, and that you may come across in your travels around the *Northeast* region, include:

- Cambridge Co-Housing (Richdale Avenue, near Walden Street, Cambridge, MA)
- Sustainable Housing Demonstration Project (136 Appleton Street, near Huron Avenue, Cambridge, MA)
- New View Co-Housing (Acton, MA)
- Dudley Street Neighborhood (Dorchester, MA)
- Wampanoag Tribal Building (Gay Head, Martha's Vineyard, MA)
- Massachusetts Audubon Wildlife Sanctuary Visitor Center (South Wellfleet, MA)
  National Audubon Society Headquarters (Manhattan, NY)
- 4 Times Square (Manhattan, NY)
- South Jamaica Library (Queens, NY)
- Boscawen Elementary School (Boscawen, NH)
- Brunswick High School (Brunswick, ME)

The development of this guide was solicited by Eric Friedman of the Operational Services Division and Sarah Hammond-Creighton of the Division of Capital Planning and Operations, and was carried out from February through April 1998 by three graduate students in Tufts University's Department of Urban and Environmental Policy. The cases were developed in conjunction with a sustainable building Resource Guide, which is also available.

AUSTIN, TX
GREEN BUILDER PROGRAM

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They prefer that people consult the website for information, whenever possible, as the staff has become overwhelmed with requests for information.

PROGRAM SUMMARY

The City of Austin's Green Builder Program is widely known as one of the earliest and most advanced of governmental sustainable building initiatives. When it began in 1991, the program focused on the building and renovation of private residences. In 1994, the program developed comprehensive Sustainable Building Guidelines for the construction and operation of all future and existing *municipal* buildings. More recently, the program has been expanded to address commercial buildings, as well. This case study goes into greater detail on the municipal initiative than on the residential or commercial initiatives, although all are discussed to some extent.

AUSTIN, TX
GREEN BUILDER PROGRAM

HISTORY

The Residential Program

The Green Builder Program (GBP) came out of Austin's Energy Star program: a highly successful rating system program for certifying home energy efficiency, which was established in 1986. Austin's Energy Star program now works in conjunction with the GBP. (The Environmental Protection Agency later appropriated the Energy Star name for its own program.) Initially, the GBP focused only on residential buildings, addressing issues of water conservation, solid waste, building materials, health impacts, and economic sustainability, in addition to energy efficiency. With a grant from Public Technology, Inc.'s Urban Consortium Energy Task Force (UCETF), the city's Environmental and Conservation Services Department (ECSD, now the PECSD, for "Planning...") developed the first comprehensive Sustainable Systems Rating Program for private housing. The rating system was designed to be adaptable to other municipalities' local building materials and resource efficiency options. Details on the rating system can be found under the History section of the website.

Building and design professionals committed to green building can become members of the GBP, and certain manufacturers, suppliers, and real estate agents can be associate members. An incentive for builders' participation is that they will receive assistance in finding buyers, and they are listed in a Directory of Green Professionals, giving them a way of standing out from other companies in a highly-competitive industry. An incentives for buyers is that everyone within the city's utility company service area can receive rebates from the electric utility for energy conservation. GBP membership is free, but to gain membership in the GBP, design and building professionals must attend a half-day training seminar, and to retain membership, they must fulfill continuing education requirements. For example, attendance at Sustainable Building Coalition meetings or at sustainable building seminars put on by the Center for Maximum Potential Building Systems counts as credit towards membership maintenance. Education of builders and the public on building sustainable buildings is a cornerstone of the GBP. The GBP now maintains a close relationship with the builders' and realtors' associations, and the program enjoys their support. Additional outreach is done through ads, presentations, booths, direct mail, and TV segments. The program uses a voluntary, marketing-based approach for the private sector (now for commercial building as well as residential).

GBP staff also consultants for the Green Habitat Learning Project, in collaboration with the local Habitat for Humanity and the American Institute for Learning. This project teaches at-risk youth how to build low-cost, sustainable housing (on city lots). These projects are particularly noteworthy for their cost-effectiveness. GBP's buildings are economical in part because they don't rely heavily on wood.

AUSTIN, TX
GREEN BUILDER PROGRAM

The Municipal Program

In the early '90s, staff from the ECSD's GBP, Energy, Air Quality, and Water Conservation divisions began working with the Aviation Department on sustainable building guidelines for the new municipally-owned Austin-Bergstrom International Airport. These guidelines covered issues of material choice, energy performance, water conservation, and recycling; the existing infrastructure was salvaged from the Air Force base. (The project is still in progress.) GBP staff became interested in applying similar guidelines to all municipal projects in the city.

About the same time (in 1993), two architects in the city's Architectural Management Division of the Public Works Department, and members of the local Sustainable Building Coalition citizens advocacy group proposed that the GBP be expanded to address all city-owned buildings. (Municipal buildings include all sorts of facilities, including office, institutional, and industrial.) In late 1993, GBP staff drafted a City Council Resolution, which called for the ECSD to develop Sustainable Building Guidelines within six months for the construction and operation of all future and existing municipal buildings. The Resolution was passed in early 1994.

The GBP based its Sustainable Building Guidelines in part on those developed by the City of Seattle and the Bonneville Power Administration in 1992, entitled "Designing with Vision: Public Building Guidelines for the 21st Century." The GBP worked primarily with the Department of Public Works and Transportation's Architectural Management Division to develop the standards (since that is the department that would most use them), but also with a steering committee comprised of staff from other divisions and departments (including city engineers, and water conservation and air quality specialists) as well as some representatives of Austin's design and construction communities.

The guidelines address the full range of environmental implications of building, throughout all stages of the process (roughly: programming, design, construction, post-occupancy, and facility operations and maintenance), in the following areas, going beyond regular codes and ordinances:

- Health and Safety -i.e. indoor air quality
- Water -quality and quantity
- Energy -efficiency, electrical load management and peak demand reduction
- Waste -construction and demolition, and operational waste reduction
- Building Materials -life cycle impacts, increased building longevity

In the guidelines, it is stipulated that they to be implemented to the greatest "extent practicable" and to the extent that the project budget allows for all municipal projects (new and renovated). Which of the Guidelines will be requirements for particular projects is mainly determined by the project manager during the early programming phase of the design process. Project managers are architects or engineers from the "customer" department in charge of the particular building project; this is often the Public Works Department, but is sometimes another departments, such as Parks or Aviation. Project managers must attend sustainable building seminars sponsored by the GBP. Project managers are there to represent the City's interest and manage the projects, but are not the ones to actually design them. Private firms are hired to do the actual design.

The guidelines emphasize a team-oriented approach, which involves holding workshops and troubleshooting sessions that facilitate input from clients, designers, and building users (often including the public). Design teams are, at a minimum, comprised of the project manager and other representatives of the customer department, and staff of the contracted private architectural/engineering firm. At least one member of the contracted design firm's team, or else a subcontractor, is supposed to have sustainable building expertise. The project manager gives the contracted design team a list of local sustainable building consultants to select from; GBP staff helped develop this list. GBP staff also run educational workshops for project teams, provide technical review assistance, and can provide consultation at any point during the process.

Project managers are expected to coordinate the team's efforts to select green building goals and strategies for implementation. The customer department has the final say about which guidelines will and will not be followed for the project. (The Environmental Sustainability Checklist in Appendix B of the Sustainable Building Guidelines illustrates some of the sorts of goals that might be outlined.) Project managers help determine what sorts of publicity might be gained (i.e. community-involved dedication of the building, media involvement, etc.). And they are asked to get feedback throughout the process from designers, contractors, occupants, and operators and pass it on to the GBP staff so that it can incorporated into future versions of the Guidelines. The ECSD is charged with reviewing the use of the Guidelines and reporting back to the City Council on an annual basis.

Goals, the extent to which they have been met, and the project budget are to be reviewed by the project manager and the team at the end of the design development phase. Economic analyses such as life-cycle costing (LCC) and payback analysis are to be used when considering the budget. (LCC takes into account factors such as expected reductions in maintenance, replacement, and health costs associated with the investments.) Goals and the budget are then finalized before final construction documents are submitted.

The GBP also requires that performance is measured and monitored for all projects that are implemented. A post-occupancy evaluation is to be conducted of the operations and management of building systems, and building users are to be surveyed for feedback on the specifics of building performance.

For more information on the design team process, or information on specific projects, contact Kalpana Sutaria or Alison vonStein, project managers with the architectural division of the Public Works Department and members of the GBP steering committee (512-499-7225).

The Commercial Program

By using the guidelines for municipal operations, Austin sees itself as setting a good example for the private sector, which is encouraged but not required to build sustainably. Private developers can receive a rebate from the electric utility only if improved energy performance is built into the project during the early stages of design. As of 1997, companies that have made outstanding achievements in sustainable building and operation of their businesses are being recognized with Businesses for an Environmentally Sustainable Tomorrow (BEST) Awards (based on a successful program in Portland, OR), and all winners are profiled in a BEST Case Study. These case studies can be ordered for free from the GBP.

STAFF AND FUNDING

Originally the GBP had a staff of one (Laurence Doxsey); it now has a staff of six full-time employees, representing all ECSD divisions. Early development funding for the GBP was provided by the Center for Maximum Potential Building Systems. The program later received two other grants to develop the Sustainable Building Sourcebook (see Key Materials section) and the Green Habitat Learning Project. The GBP is now entirely funded by the City of Austin. All GBP budget items are paid for through a budget transfer from the city-owned electric utility, and recently, also from the water and wastewater utility.

AUSTIN, TX
GREEN BUILDER PROGRAM

ACHIEVEMENTS

The Green Builder Program was recognized at the UN '92 Earth Summit in Rio with an award from the International Council for Local Environmental Initiatives. The program has also received awards from many groups, including Renew America, Public Technology, Inc., and the Texas Governor's office. The GBP is also one of the founding members of the U.S. Green Building Council.

Municipal:
Each year, approximately 40 municipal building projects (both new and renovated) are developed each year, all of which use some of the guidelines. The GBP is still developing reporting and monitoring parameters to measure the levels of success in implementation. GBP staff now also serve as hired consultants to the cities of San Francisco and Philadelphia, to help them set up their own municipal programs. (They also sometimes refer interested people and agencies to a consulting firm called What's Working, in Boulder, Colorado. The original GBP Program Manager, Doug Seiter, now works for that firm, which specializes in environmental construction and energy and environmental program development.)

Commercial:
By using the guidelines for municipal operations, Austin sees itself as setting a good example for the private sector, which is encouraged but not required to participate. Some multi-family residential and commercial green building projects have been completed, in consultation with GBP staff. The Whole Foods Market and Corporate Headquarters was the initial test case, and the Gables Central Park luxury apartment development was built according to GBP guidelines in 1997.

The GBP recognizes the need to encourage regional business startups that will facilitate sustainable building. Already, they have seen the development of rainwater harvesting and alternative wastewater services in the area, as well as an increase in alternative offerings (like certified sustainably harvested wood) from local materials suppliers.

Residential:
More than 6,000 homes have been rated under the GBP residential program (almost 600 in 1997 alone), and most of the active builders in the Austin area now participate. In addition, the GBP, the city's electric utility, Texas Capitol Area Builders Association, Home Depot, and others have contributed to the creation of a regular TV show called "Our House" that educates viewers on techniques for environmentally-sound home improvement and energy efficiency.

In 1996, the Texas Veterans Land Board decided to create its own Greenbuilding Program, modeled after Austin's. Under the program, the Board offers low-interest loans to veterans interested in building green homes or making green home improvements.

LESSONS LEARNED

Some of the major obstacles that the GBP has faced are as follows:

- varying levels of interest and understanding on the part of different municipal departments, project managers, and design consultants;
- budgeting that did not make allowances for greater up-front investment (which was particularly necessary for getting energy savings beyond code);
- builders who feel that green building practices are strange, costly, or experimental;
- resistance to GBP efforts from members of the local AIA (American Institute for Architects) and CSI (Construction Specifications Institute); they complained to the Council that they had not been included in the planning process; and
- design recommendations made by subcontractors have not always been conveyed by the contracted design team to the project manager, and vice versa, which has meant that recommendations are not always incorporated into the design and/or implemented.

The GBP has aimed to address these issues by:

- conducting training for project managers and requiring that there is some expertise on sustainable design within each design team;
- making sure that budgets for projects now accommodate greater initial investment. There was disagreement between Public Works and the GBP about how much more needed to be budgeted—Public Works wanted 40% and the GBP thought it should be less than 5%, so they settled for around 15%.
- attempting to educate builders through seminars, conferences, and the newsletter, often using the Environmental Building News as a resource;
  presenting builders with "off-the-shelf" green products and *proven* green building techniques, many of which have been used (often in Europe) for years;
  discussing the importance of sustainable building and the unique requirements for each project with contractors during the pre-bid conference for each municipal project;
- inviting AIA and CSI representatives to attend future planning meetings. Although they chose not to attend, they did decide to give their full support to the GBP's efforts. However, even without the attendance of these stakeholders, the GBP found that the guidelines became increasingly diluted over the course of the planning process, due to resistance by other members of the steering committee; and
- requiring that sustainability recommendations from subcontractors go to the project file, not just to the contracted design team. The project manager will then refer to the file when going through their checklist, allowing for better monitoring. Checklists and project files are reviewed annually by the GBP for an overall report.

THE FUTURE

Deregulation of the electric industry will have a major effect on the GBP because its residential and commercial programs' main financial support has always come from the current city-owned electric utility. Nevertheless, the program is popular within municipal government and in the community, so it is likely to continue to receive funding from the city somehow.

GBP staff feel that higher-quality projects and greater use of the guidelines will occur in the future, as the GBP takes the steps mentioned above, and continues to improve its outreach efforts, through media articles, speaking engagements, technical seminars, and revision of the Sustainable Building Sourcebook. While the program may have been more accommodating in its earlier stages, in order to gain momentum and acceptance, it has now gotten a good deal of feedback and backing from people in the building industry and can afford to be more stringent.

Austin's next Green Building Conference will be held in November of 1999. The 6th Annual Green Building Conference took place in November of 1997, hosted by the City of Austin, along with the Texas Energy Conservation Office and the Lower Colorado River Authority. The conference attracted about 2,600 people. Information on the past and upcoming conferences is available on both greenbuilder websites.

The GBP now fits into a larger, Local Agenda 21-style sustainable development effort called the Sustainable Communities Initiative (SCI), which the city has been involved in only since 1996. The SCI activity that has the most bearing on the GBP is the development of the Capital Improvements Project (CIP) Sustainability Matrix. The matrix is used to compare and score all development projects being considered for each bond election, according to a broad range of criteria that is meant to encompass equity, environmental, and economic concerns. Projects that will make good use of the city's Sustainable Building Guidelines receive a higher rank on that portion of the matrix than those that do not. The SCI has recommended that environmental purchasing guidelines and use of life cycle cost-benefit analysis be incorporated into city financial processes. The SCI also intends to develop and implement sustainability assessments and sustainable operation training for all city departments over a five-year period, and establish a municipal sustainable technology transfer. (More information on the SCI and the CIP Sustainability Matrix is available at http://www.ci.austin.tx.us/sustainable.)

AUSTIN, TX
GREEN BUILDER PROGRAM

KEY PROJECT

Rosewood Zaragosa Health Clinic and South Austin Health Clinic Renovation Project

This project incorporates many of the city's sustainable building guidelines. For example, it includes a waste recycling component.

Project Manager:	Kalpana Sutaria, Architect, Austin Public Works Dept.
Architect:	Polking, Horn, & Group Architects
Sustainable Building Consultant:	StudioVert
Contractor:	Brawn and Butler

KEY MATERIALS

Sustainable Building Sourcebook

Revised in 1998, the GBP's Sustainable Building Sourcebook database contains design, materials, and construction specifications for new and existing buildings, including information on technology maturity, costs, and availability, public acceptance, financing, and resources for assistance. The Sourcebook is intended especially for use by building professionals. Though it focuses on residential applications, much of the information is transferable to non-residential projects. It includes chapters on water, energy, building materials, and solid waste. 400 pages, in 3-ring binder for updating.
It is available on the greenbuilder websites, or can be ordered through the GBP for $25.

New materials on residential building are currently under development.

City of Austin Sustainable Building Guidelines

One volume of the Sustainable Building Guidelines, published in 1994, covers the principles of sustainable building design. It outlines the specific goals of the guidelines, strategies to achieve those goals throughout the design, construction, and post-construction process, and includes appendices such as an Environmental Sustainability checklist for project managers, a Material Selection Matrix, a Sourcelist of Material Manufacturers & Suppliers, Case Studies of sustainable building projects in other areas, and a glossary of relevant building terms. (We have this volume, but it can be ordered from the GBP for $15.) Another volume is entitled "Operation and Maintenance for City Facilities." (It can be ordered for $10.) *The third volume, "Specifying for Sustainability," should be complete by the end of 1998; it will provide more detailed specifications for designers and contractors in CSI format.*

Green Builder News

Green Builder Program bi-monthly newsletter. Free.
Go to the www.greenbuilder.com website to see past issues.
To subscribe to the greenbuilder electronic mailing list, send an e-mail message to: GBNews@lists.greenbuilder.com with "subscribe" in the subject line; or contact the GBP.

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LOS ANGELES, CA
CITYWIDE SUSTAINABLE DESIGN TASKFORCE

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LOS ANGELES, CA
CITYWIDE SUSTAINABLE BUILDING TASK FORCE

PROGRAM SUMMARY

Los Angeles has only recently begun the process of integrating sustainability criteria and features into building projects, yet Los Angeles' comprehensive, multi-focus framework sets up the city to foster one of the most comprehensive municipal sustainable building programs in the country. The Los Angeles Citywide Sustainable Building Task Force, established in 1995, is comprised of staff from various city agencies, as well as from local non profit organizations and architectural firms with a focus in sustainable building. The task force has identified three general areas of focus. These areas are: city owned buildings and sites, city-influenced buildings and sites, and private sector development. The Task Force is currently in the process of selectively translating their many goals into action, but it should be noted that Los Angeles is not at the full program implementation stage as of yet.. This case study will focus on primarily on Los Angeles' process of developing a sustainable building program, and secondarily on the implementation of program elements.

TIMELINE

1994 Project to rebuild to build the Eighth District Constituent Services Center incorporated many green building features and became known as the city's first truly sustainable building.

1995 City council motion created interdepartmental Task Force on green building.

1996 Task Force clarified and publicized Mission and Objectives, and created subcommittees.

1997 Task Force published Sustainable Building Reference Manual for city construction projects. Also devised work plans for the next few years.

1998 Task Force to publish sustainable building guidelines tailored to three tiers of the program. These new guidelines will be incorporated into the Reference Manual to provide more complete information on sustainable building techniques and features, as well as an update on which features are recommended and which are required by ordinance.

2000 Task Force will host "Beyond 2000", an international conference on sustainable building.

LOS ANGELES, CA
CITYWIDE SUSTAINABLE BUILDING TASK FORCE

HISTORY

Los Angeles' venture into sustainable building had very unusual beginning. In April of 1992, the construction of the Eighth District Constituent Service Center (referred to as the "mini city hall" at the time), which was two months away from opening, burned down in the midst of rioting. During the planning phases of reconstruction, the city's Environmental Affairs Department saw the opportunity to improve upon the project by incorporating sustainable features such as energy efficient lighting and daylighting techniques, the use of recycled and less toxic materials, and water conservation measures. More advanced green features, such as an electric vehicle charging station, were also incorporated into the project. Eighth District Council member Mark Ridley-Thomas, who spearheaded the project, was so satisfied with the project's outcome that he initiated the city council motion to have Environmental Affairs establish an interdepartmental task force to advance sustainable building in Los Angeles. The resulting Citywide Sustainable Design Task Force included representatives from Los Angeles' departments of engineering, architecture, general construction, public works' solid waste management, and community redevelopment.

Despite initial excitement, the Environmental Affairs Department, who was charged with assembling the Task Force and giving it direction, lacked staffing and resources to jump start such an ambitious project. As a result, progress was slow for the year after the motion passed. Mr. William Holland, the City Architect, eventually took the informal lead on and assembling the Task Force. Mr. Holland's leadership was formalized in the Task Force's first report to the City Council, where in he was named as Chairman. The Task Force was comprised from the agencies above, as well as from other agencies such as the parks and recreation, and the water and power agencies. Furthermore, non-governmental representatives such as architects and consultants were included in the Task Force. This diversity of members on the Task Force was important in ensuring that various stakeholders had a voice in the process. Moreover, the inclusion of non-governmental representatives was integral in developing an approach for the private sector, the third area of focus.

At this time, Los Angeles' approach to sustainable building is still at the Task Force level. All work being put in by members is essentially volunteer time and time borrowed from their other jobs, which is a significant impediment to rapid progress. The Environmental Affairs Department is in the process of applying for federal grant monies, and they have received a Department of Energy grant to develop a sub-program for residential energy efficiency and technical assistance for energy upgrading. Los Angeles currently has a performance contracting agreement with the local energy service companies to supply efficiency retrofitting to public facilities. Under this agreement, the energy service companies provide retrofits at no up front cost to the facility, and the companies then recoup their costs through the energy savings. The Task Force is also working with these companies to provide a similar arrangement for private energy efficiency upgrades.

LOS ANGELES, CA
CITYWIDE SUSTAINABLE BUILDING TASK FORCE

Currently, funding priorities are focused on sustainable building technical and marketing assistance, both in the public and private sector The long term priorities for funding would be to establish an Office of Sustainable Design and Construction, employee a Director and support staff, and start funding outlays for project implementation under the program's auspices.

In the interim, the Task Force has worked on the publishing the Reference Manual (which was distributed in November of 1997), planning for the Beyond 2000 conference, identifying potential projects within the three areas of focus, developing guidelines (to be published in July of 1998), and educating agency staff, architects and other professionals, and the residents of Los Angeles about the potential of sustainable building in their city.

Objectives and Actions for City Owned Buildings

The Task Force has identified specific objectives for the three areas of focus, city owned buildings, city influenced sites, and private development. The following is an explanation of some of the objectives for city owned buildings, as well as actions that the Task Force has taken to meet them.

- Identify specific projects that lend themselves to green building and get involved at the design phase. To this end, Task Force members are training the city design staff on sustainable building issues, and the city design staff will prepare matrixes of sustainable features with the Architectural Division for selected projects. The City Architect will sign off on matrixes before signing construction plans. This process is now underway in the construction of two new 911 facilities, where concern for the comfort of overstressed emergency workers has lead the project managers and Task Force members to design facilities that let in a lot of natural sunlight, have superior ventilation systems and other health supporting features. There is no standard criteria at this time to evaluate potential city owned sites; because of the diversity of structures that the city builds and owns, it is difficult to create such criteria. At this beginning state of the program, city owned projects are informally hand picked for "greening" by the tacit criteria of : eagerness of the parties involved, perceived need, and political as well as technical feasibility.

- Educate city agency staff on sustainable building issues and the opportunities for cost effective improvements. Department newsletters will start to feature articles on the Task Force and sustainable building efforts. Furthermore, Mr. Holland and other Task Force members have given talks at all applicable city agencies, and are working with the American Institute of Architecture (AIA) and local universities in their outreach efforts. Much progress has been made working with the Los Angeles Unified School District on sustainable building issues. Task Force members at the Department of Water and Power have allocated funds to eliminate asphalt in school parking lots, replace with porous materials, and strategically plant trees on these parking lots to shade air conditioning systems and thus reduce heat gain. The School Board is also considering the general upgrading of school air conditioning systems to meet indoor air quality needs.

- Utilize the Reference Manual to promote the implementation of specific features, such as energy efficient lighting techniques and indoor air quality standards, into current construction projects. The Task Force hopes that since the currently required green features, such as landscaping and water conservation ordinances, are included in one manual, that this convenience will increase compliance with current ordinances and familiarize users with sustainable building regulation.

- Incorporate the EPA's Energy Star Program within city owned buildings as a support service to the Task Force efforts. This program is currently being implemented by the Department of Water and Power.

- Set up a system to monitor and evaluate progress of city construction projects incorporating green building design and features. This is more or a long term goal that will likely come to pass after the creation of an Office of Sustainable Design and Construction.

Objectives and Actions for City-Influenced Buildings and Sites

The following is an explanation of some of the objectives for city-influenced buildings and sites, and actions that the Task Force has taken to date to meet them.

- For sites where the City is overseeing the environmental impact report, establish standards for mitigation and monitoring for projects that would have serious impacts in the areas of water and energy use, water quality, and solid waste. This is the goal that the City-Influenced Sites Subcommittee is currently having the most success meeting. For example, the new sports arena under construction in Los Angeles will incorporate a host of sustainability features in order to mitigate environmental impacts. Energy efficiency is one key area of mitigation; the new arena will be fitted with mainstream energy saving technologies, as well as more advanced solar collection windows. The Task Force plans on running a DOE 2 analysis of the arena, which is a computer analysis of energy use and operating systems that will identify areas where further upgrading will be cost-effective. Other sustainability features at the arena include a storm water retention system under the parking lot and site remediation including vegetative replanting. Construction and Debris recycling is ongoing at the construction site of the arena.

- For sites that the city plans to lease, ensure the incorporation of green building features into tenant improvements and facility operations. This will be achieved by rewriting Requests for Proposals (RFPs) to solicit facilities and by revising lease contract language to reflect sustainability concerns, as well as by creating a standard set of criteria to evaluate potential lease sites. Lease revision has proven to be an onerous task because the city's boilerplate lease is over 90 pages long and written in "legalese"; the revision of specific clauses requires more staff time than is currently available. As an interim measure, the City-Influenced Sites Committee is working with the leasing agency to develop facility agreements on sub-metering and efficiency credits to encourage tenants to conserve on energy and water.

- For sites that the City plans to provide grant, loans, or other funding for, promote the incorporation of green building features into projects by revising RFPs and loan agreement language to reflect sustainability concerns. Create a standard set of criteria to evaluation potential funding projects for sustainability features. This is a long term goal that requires more resources than are currently available to the subcommittee.

- Tie sustainable building issues to City procurement contracts by incorporating a standard set of sustainability requirements. This is another long term goal that requires the allocation of resources, staff time, as well as the garnishing of more political support.

Objectives and Actions for Private Sector Development

The following is an explanation of some of the objectives in the area of private sector development, as well as actions that the Task Force has taken to meet them.

- Develop a market based program to promote green building practices within the private sector by providing background and cost-effectiveness information, technical and design assistance, and marketing venues for participants. The Private Development Subcommittee is working on an agreement to extend performance contracting to private buildings. DOE grants have provided funds for technical assistance related to energy efficiency.

- Develop a system for issuing building permits that support greener building by supplying informational pamphlets to the public at the Department of Building and Safety, working with industry trade journals to include green building information, and incorporating green building issues in the Building and Safety Department's "feedback" meetings with its Building Industry Advisors Group (BIAG). Redesigning the building permitting process to reflect sustainability has proven to be a tricky endeavor; the Task Force is now leaning towards a case manager approach, where individual projects incorporating "green" design and technologies will be assigned to a case manager for guidance and expedition through the permitting process.

- Continue current outreach and lecture programs to local architectural and construction schools on green building issues and the City's plans for incorporation. The Private Development Subcommittee will be approaching the City Council for approval and allocation of funds to continue and expand such outreach efforts.

- Continue to distribute and promote the Sustainable Design Reference Manual to private sector developers, architects, and construction contractors as a way of familiarizing applicable industries with green building issues, techniques, and current specifications.

- Create a City of Los Angeles sustainable building website, geared for the private sector, with information pipelines and related links to make information even more accessible to the public.

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LESSONS LEARNED

** Again, it should be noted Los Angeles is in its initial stages of creating a comprehensive sustainable building program. Therefore, the lessons learned include information on planning and process hurdles, and possible solutions to them, does not include information on programmatic elements and evaluation.

- Funding is crucial to the rate of progress of municipal green building initiatives, especially initiatives as ambitious as Los Angeles'. Although it is inspiring that so many agency staffers and private professionals are volunteering their time and borrowing time from their other jobs to work on Task Force matters, program development and implementation would be moving along at a faster pace if there was a centralized office devoted to the task, with paid director and support staff to coordinate activities. One of the primary goals should have been to research and acquire funding at the inception of the Task Force.

- Despite the challenges mentioned above, the Task Force has proven in its efforts that it is not necessary to have a traditional program infrastructure, including official office and staff, in order to start taking action. Task Force members have worked initially to meet goals that do not require an intensive amount of resources and money, such as industry outreach efforts and preparatory work with agencies. Thus, Task Force members have avoided stagnation from organizational and financial challenges by: utilizing previous skills and job experience in their Task Force projects, working within small, easy managed and focused subcommittees , and by focusing on goals that are can be feasibly met with the resources at hand.

- The agency charged with forming and directing Los Angeles' Task Force on sustainable building was not prepared to embark on the project; despite excitement over the idea of a task force, the staff simply did not have capacity to take on the project. Since municipal programs on sustainable building tend to have too many goals and not enough resources to meet them, it is very important to have leadership that has the resources to get the ball rolling. The lead agency for sustainable building projects does not have to be the city environmental agency; it could be any agency related to building that has an appropriately skilled and available staff, as well as resources.

- Lack of information and general suspicions about green building techniques, reliability, and cost-effectiveness are barriers to all green building initiatives. Task Force members commented that one of the biggest challenges is to get city agency staff excited about the potential of greener building, which is difficult because impacts are always obvious. Furthermore, Bill Holland, chairman of the Task Force, notes that resistance to green building is often as a result of making agency staff who work in architecture, building, and construction feel as if they have been doing their jobs the wrong way. He notes that it is very important to stress the opportunities that sustainable building presents, especially cost savings potential, and take pains to present green building information in a positive light, and not as a negative indictment of traditional practices.

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KEY MATERIALS

Sustainable Building Reference Manual
First Edition, November 1997

Provides current government requirements for building design, construction, and operation, as well as sustainable building information organized in sections: site design, landscaping, recycling and solid waste management, sustainable materials and recycled content products, indoor air quality, energy, and water. The manual delineates between features are required by law (and includes a copy of the statute or ordinance for reference), and recommended features. The introduction of the manual notifies users of impending guidelines, which will codify many of the features that are now only recommended. Also includes Task Force goals and objectives, a contact sheet, and case studies of a few green building projects in and around LA, including one on the Eighth District Constituent Service Center.

Sustainable Building Guidelines
(to be published) July 1998

Will provide an update of Los Angeles recommended and required guidelines pertaining to the design, construction, and operation of both public and private buildings. Support documentation, such as copies of ordinances, shall also be included. These guidelines will also provide information on sustainable building resources and services provided by the City of Los Angeles. Rather than have two separate yet similar documents in circulation, the City will publish the new guidelines in a format to be incorporated into the Reference Manual.

REFERENCES

Communications with Kelly Ingalls, Senior Management Analyst/ Bureau of Sanitation's Integrated Solid Waste Management Office, Task Force member, February and April 1998.

Communications with William Holland, City Architect, Task Force Chairman, March and April 1998.

Communications with Danielle Britton, Bureau of Sanitation's Integrated Solid Waste Management Office, Task Force Member, March 1998.

Communications with Gary Gero, Environmental Supervisor, Environmental Affairs Department, Task Force Member, April 1998.

Communications with Kipp Rudd, Associate Planner, Community Redevelopment Agency, Task Force Member, April 1998.

City of Los Angeles Citywide Sustainable Reference Manual, First Edition, prepared by the Citywide Sustainable Design Task Force, November 1997. Contains case study on the Eighth District Constituent Services Center, which was also used for this report.

Task Force documents, including: motion to create the task force, "Mission and Objectives", "Goals and Objectives for 1998-2000".

CONCLUSIONS

There are many opportunities for states to benefit from energy savings and healthful work environments by incorporating sustainable design principles in the renovation of existing buildings and the construction of new buildings. The Green Builder Program in Austin and the Citywide Sustainable Building Task Force in Los Angeles are two models from which lessons can be learned. While these programs differ from one another, together they demonstrate the following:

- There is value in undertaking sustainable design. Both Austin and Los Angeles have found value in creating programs that increase the use of sustainable building design techniques. Value can be measured in a multitude of ways, from substantial energy and water savings to health costs averted from higher indoor air quality. Over 25 sustainable building programs are currently underway in municipalities across the country, which is a testament to the growing demand for sustainable building practices. These programs, along with other isolated efforts, are resulting in the construction of many buildings that incorporate sustainable design.

- Inclusiveness helps foster success. Both cities studied found that including all possible stakeholders in the early stages of program development was crucial for generating support and creating a diverse resource base for the sustainable building initiative. Inter-agency outreach, and well as industry and community outreach efforts, are necessary to inform stakeholders of the impending program and to elicit their participation in program planning. If a Task Force is created, every agency affected should have a representative on it.

- Upper level leadership and support is key. A sustainable building program's chances of success and scope of influence are greatly increased if a core group of high level officials believe in the concept of sustainable building and are committed to seeing the program through.

- Sustainable building programs are most effective when they are supported by agency staff. Since this field is technical and ever-changing, sustainable building programs must either have a dedicated staff or rely on the expansion of responsibilities among the current staff. Funding for this support may come from the legislature, from existing appropriations, or from grants. Grants are usually most suited to start-up efforts or a targeted initiative.

- Sustainable building projects may need additional funding for up-front costs. In Austin, they have found that building projects that incorporate sustainable features often require that 5-15% more be budgeted for initial investment costs. These costs are consistently offset by energy and maintenance savings over time – often in less than 5 years. Thus, sustainable building requires a switch to longer term financial planning and accounting to fully appreciate the cost effectiveness of projects over time.

- It is a good idea to establish clear and specific guidelines for the implementation of sustainable features into construction projects. Austin's guidelines are required for public projects but voluntary for private construction. They provide builders and building owners with justifications, resources, and technical specifications on green building. Los Angeles' upcoming guidelines, which will be incorporated into the current version of the city's Sustainable Building Reference Manual, will integrate information about aspects of sustainable building with the actual building codes that are required for all buildings, thereby making the Manual into the one guide necessary to build green in LA. Either approach to writing guidelines demonstrates that the government is serious about encouraging sustainable building.

- Voluntary programs may fall short of what is possible with more stringent requirements. Innovative approaches to compliance are necessary to find that "happy medium" between voluntary and mandated approaches. One approach, represented by the Green Building Council's LEED program (Leadership in Energy and Environmental Design), provides builders with a standardized menu of criteria to choose from in order to certify a project as a sustainable building. This type of approach, if required, preserves choice and encourages innovation while still guaranteeing a known level of compliance.

The Commonwealth of Massachusetts owns approximately 2,000 buildings. All of these buildings (and their inhabitants) have some potential to benefit from sustainable design improvements. The following conclusions apply specifically to the Commonwealth:

- Massachusetts' public and private energy efficiency and conservation programs provide a good foundation for comprehensive sustainable building initiatives. Austin, and many other locales, have successfully used energy programs, such as Energy Star, as a foundation for sustainable building initiatives.

- Massachusetts might want to start with a pilot sustainable building demonstration project in a public building in order to highlight the entire range of possibilities in greener building. Demonstration projects such as Los Angeles' constituent service center spur public interest in sustainable building and serve as an operational model of green building potential.

Massachusetts has numerous resources within the region on sustainable building issues. From public energy efficiency programs to local organizations to demonstration projects, the state is well equipped with the interest and the expertise necessary to make a sustainable building initiative work. In order to get the ball rolling in Massachusetts, an organized effort is needed to bring these resources together under the auspices of a state supported sustainable building initiative. We hope that these case studies and the accompanying Resource Guide will prove useful in this endeavor.